

INITIAL RESULTS FROM ON-ORBIT TESTING OF THE FRAM MEMORY TEST EXPERIMENT ON THE FASTSAT MICRO-SATELLITE

Todd C. MacLeod
NASA Marshall Space Flight Center

W. Herb Sims
NASA Marshall Space Flight Center

Kosta A. Varnavas
NASA Marshall Space Flight Center

Fat D. Ho
University of Alabama Huntsville

Abstract: The Memory Test Experiment is a space test of a ferroelectric memory device on a low Earth orbit satellite that launched in November 2010. The memory device being tested is a commercial Ramtron Inc. 512K memory device. The circuit was designed into the satellite avionics and is not used to control the satellite. The test consists of writing and reading data with the ferroelectric based memory device. Any errors are detected and are stored on board the satellite. The data is sent to the ground through telemetry once a day. Analysis of the data can determine the kind of error that was found and will lead to a better understanding of the effects of space radiation on memory systems. The test is one of the first flight demonstrations of ferroelectric memory in a near polar orbit which allows testing in a varied radiation environment. The initial data from the test is presented. This paper details the goals and purpose of this experiment as well as the development process. The process for analyzing the data to gain the maximum understanding of the performance of the ferroelectric memory device is detailed.